

**Louisiana Department of Environmental Quality (LDEQ)
Office of Environmental Services**

STATEMENT OF BASIS

**Mosaic Fertilizer, LLC
Faustina Plant
St. James, St. James Parish, Louisiana
Agency Interest Number: 2425
Activity Number: PER19960001
Proposed Permit Number: 2560-00021-V0**

I. APPLICANT

Company:
Mosaic Fertilizer, LLC
7250 Highway 44
Uncle Sam, LA 70792

Facility:
Mosaic Fertilizer, LLC
9959 Highway 18
St. James, LA 70086 Louisiana

30° 5' 10" Latitude, 90° 54' 45" Longitude

II. FACILITY AND CURRENT PERMIT STATUS

Mosaic Fertilizer, LLC's Faustina Plant consists of an ammonia plant, two sulfuric acid plants, one phosphoric acid plant, and three units in the granulation plant. A urea plant was shut down in 1999, and a uranium recovery plant was permanently shut down in 1998. The Sodium and Potassium Silicofluoride Plants have not operated since the mid 1990's. Descriptions of the individual processes are provided below:

AMMONIA PLANT

The Ammonia Plant is capable of producing up to 1750 tons of ammonia per day. Ammonia is produced by the catalytic reaction of natural gas, steam, and air. In the primary reformer, natural gas and steam are heated to 1500 ° F to produce hydrogen. Air is added to the stream in the secondary reformer to provide nitrogen for the later synthesis of ammonia. Reformer gases, which also contain carbon dioxide and carbon monoxide produced in the primary reformer, are passed to a shift converter to remove these impurities. Carbon monoxide is removed by reaction with steam to produce carbon dioxide. The stream then passes to an absorber system that removes the bulk of the carbon dioxide in the stream. The remaining carbon dioxide was

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used by the Urea Plant, but is now vented with the remaining trace amounts of carbon dioxide and carbon monoxide impurities in the stream removed in the methanator. Purified hydrogen/nitrogen stream is then sent to a converter where ammonia is produced under high pressure. Product is condensed to the liquid phase and sent to the Granulation Plant, or to storage.

There are no modifications proposed for this area.

GRANULATION PLANT

The Granulation Plant reacts ammonia with phosphoric acid to produce either solid diammonium phosphate (DAP) or monammonium phosphate (MAP). This plant, consisting of Trains A, B, and C, has the capacity to produce 7,824 TPD of DAP and 8,184 TPD of MAP. Ammonia and phosphoric acid are reacted to about 70% completion in a preneutralizer. Resultant slurry is pumped to the granulator where additional ammonia is sparged into the rolling drum. The remaining 30% of the reaction takes place in the drums to form granular particles of DAP or MAP. The final product is conveyed and stored in two warehouses, then transferred to railcars, trucks, barges, and ships.

There are no modifications proposed for this area.

UREA PLANT

The Urea Plant was shut down in 1999.

SODIUM AND POTASSIUM SILICOFLUORIDE PLANTS

The Sodium and Potassium Silicofluoride Plants were permanently shut down in the mid 1990's.

SULFURIC ACID PLANTS

Plants 10 and 11 are double absorption plants each capable of producing 2,500 tons per day of sulfuric acid (as 100% H_2SO_4). Each plant manufactures sulfuric acid by the contact process. In the contact process, molten elemental sulfur is fed into a combustion chamber and burned in clean, dry air. Gases from the combustion chamber are cooled and routed to the solid catalyst converter. Sulfur dioxide formed in the combustion chamber is converted to sulfur trioxide in an exothermic reaction. After cooling, the converter exit gas enters an absorption tower where sulfur trioxide is absorbed into sulfuric acid and combined with water to form additional H_2SO_4 . Sulfuric acid produced in these plants is used as raw material for the production of phosphoric acid.

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The proposed modification is to permanently shut down the sulfuric acid trains. Some auxiliary equipment will continue to be used and is described under a new area called Utilities.

PHOSPHORIC ACID PLANT

Phosphoric acid is produced in one unit at the Faustina Plant. The system utilizes the wet process method of phosphoric acid production. Finely ground phosphate rock is decomposed in a reactor in the presence of sulfuric acid. The reaction slurry is filtered, producing a nominal 30% acid solution. This solution is concentrated to 54% through evaporation. The phosphoric acid product is sent to the Granulation Plant.

The proposed modification is to permanently shut down the phosphoric acid train.

UTILITIES AREA

The Utilities Area includes maintenance and support activities and a variety of material handling activities. Molten sulfur is received via truck, rail, barge or ship and is transferred via pit or directly into sulfur storage tanks that feed the separate and adjacent Gulf Sulfur Services, Ltd., LLP, Faustina Prill facility. Sulfuric acid is stored in two sulfuric acid tanks and transferred via railcar. Lime is stored and used for water treatment. The gypsum stack and ponds are included in the utilities area. The gypsum stack is currently classified as an active stack due to continued water management operations, with almost half the acres classified as inactive. The Faustina plant operations also include several portable diesel-fired pieces of equipment, fuel storage and emergency diesel-fired engines.

In addition, PSD Permit PSD-LA-602 was issued July 30, 1996.

III. PROPOSED PROJECT/PERMIT INFORMATION

Application

A permit application and Emission Inventory Questionnaire were submitted by IMC-Agrico Company on October 12, 1996 requesting a Part 70 operating permit. Additional information dated January 11, 1999, July 15, 1999, June 14, 2002, August 2, 2003, and January 23, 2004 was also received. A complete permit reconciliation application was submitted on October 19, 2005, which supersedes all previous submittals. Revised information dated April 26, 2006 was received.

Project

There are no modifications proposed for the Ammonia or Granulation Plant areas. The Urea Plant was shut down in 1999 and will not be permitted. The Sodium and

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Potassium Silicofluoride Plants were permanently shut down in the mid 1990's and will not be permitted. The proposed modification is to permanently shut down the sulfuric acid trains. Some auxiliary equipment will continue to be used and is described under a new area called Utilities. The proposed modification is to permanently shut down the phosphoric acid train. The equipment associated with the area called Utilities has always existed, but were associated with different areas that will no longer be considered operating areas. They are administratively being grouped in the newly designated area called Utilities.

Proposed Permit

Permit 2560-00021-V0 will be the initial Part 70 operating permit for the Faustina Plant.

Estimated emissions in tons per year are as follows:

<u>Pollutant</u>	<u>Before</u>	<u>After</u>	<u>Change</u>
PM ₁₀	922.85	469.60	-453.85
SO ₂	3,432.02	7.57	-3,424.45
NO _x	915.70	893.05	-22.65
CO	484.69	514.50	+29.81
VOC *	221.93	170.70	-51.23
Ammonia	5,350.90	1679.08	-3,671.82
Chlorine	0.16	0.11	-0.05
Hydrochloric Acid	0.26	-	-0.26
Hydrofluoric Acid (HF)	8.34	0.43	-7.91
Hydrogen Sulfide	14.15	10.05	-4.10
Phosphoric Acid	0.96	0.022	-0.938
Sulfur Trioxide	7.27	-	-7.27
Sulfuric Acid	137.06	0.004	-137.056
Total Fluorides	262.00	91.27	-170.73

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***VOC LAC 33:III Chapter 51 Toxic Air Pollutants (TAPs) in TPY:**

Pollutant	Before	After	Change
Benzene	Not Reported	0.009	+0.009
Dichlorobenzene	Not Reported	0.005	+0.005
Formaldehyde	0.43	0.32	-0.11
Methanol	39.46	139.30	+99.84
Toluene	Not Reported	0.015	+0.015

Other VOC (TPY): 31.05

IV REGULATORY ANALYSIS

The applicability of the appropriate regulations is straightforward and provided in the Specific Requirements section of the proposed permit. Similarly, the Monitoring, Reporting and Recordkeeping necessary to demonstrate compliance with the applicable terms, conditions and standards are also provided in the Specific Requirements section of the proposed permit.

The facility is subject to Control of Emissions for Specific Industries: Subchapter C. Phosphate Fertilizer Plants [LAC 33:III.2305]. However, the Diammonium Phosphate facilities must meet the more stringent total fluorides emission rate of 40 CFR 63 Subpart BB.

Prevention of Significant Deterioration/Nonattainment Review

No emission increases are above the PSD significance level.

Streamlined Equipment Leak Monitoring Program

The facility has no programs being streamlined.

MACT Requirements

The increase of methanol is from one source. The previous permit from 1996 included operations from the Urea Plant. A significant portion of the carbon dioxide stream from ammonia plant was consumed by the urea plant. As such, only the portion not routed to the urea plant and released from the stack was reported as an emission. When the urea plant was permanently shutdown, the full stack stream from the ammonia plant was released to the atmosphere. The increase reflects that emission. Methanol is a Class III TAP only. MACT is not required. Emissions of all toxic air pollutants listed in LAC 33:III.5112, Table 51.1 or 51.3 shall be included in the Annual Emissions Report. (TEDI [Toxic Emissions Data Inventory])

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Air Quality Analysis

Dispersion Model(s) Used: ISCLT3

Pollutant	Time Period	Calculated Maximum Ground Level Concentration	Louisiana Toxic Air Pollutant Ambient Air Quality Standard or (National Ambient Air Quality Standard {NAAQS})
PM ₁₀	Annual	22.9 µg/m ³	(50 µg/m ³)
	24 hr. avg.	143.3 µg/m ³	(150 µg/m ³)
Formaldehyde	Annual	1.2 µg/m ³	7.69 µg/m ³
Hydrogen fluoride	Annual	57.9 µg/m ³	61.9 µg/m ³
Sulfuric Acid	Annual	4.1 µg/m ³	23.8 µg/m ³
Hydrogen Sulfide	Annual	7.7 µg/m ³	330 µg/m ³
Methanol	Annual	21.8 µg/m ³	6240 µg/m ³

General Condition XVII Activities

The facility will comply with the applicable General Condition XVII Activities emissions as required by the operating permit rule. However, General Condition XVII Activities are not subject to testing, monitoring, reporting or recordkeeping requirements. For a list of approved General Condition XVII Activities, refer to the Section VIII – General Condition XVII Activities of the proposed permit.

Insignificant Activities

All Insignificant Activities are authorized under LAC 33:III.501.B.5. For a list of approved Insignificant Activities, refer to the Section IX – Insignificant Activities of the proposed permit.

V. PERMIT SHIELD

A permit shield was not requested.

VI. PERIODIC MONITORING

Compliance Assurance Monitoring, 40 CFR 64.5 Deadlines for Submittals allows the facility to submit the Compliance Assurance Monitoring plan at the first renewal of the Part 70 Operating permit. The NESHA Subpart BB and the PSD permit do have periodic monitoring for the granulation trains and the utility boiler respectively.

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VII. GLOSSARY

Carbon Monoxide (CO) – A colorless, odorless gas, which is an oxide of carbon.

Maximum Achievable Control Technology (MACT) – The maximum degree of reduction in emissions of each air pollutant subject to LAC 33:III.Chapter 51 (including a prohibition on such emissions, where achievable) that the administrative authority, upon review of submitted MACT compliance plans and other relevant information and taking into consideration the cost of achieving such emission reduction, as well as any non-air-quality health and environmental impacts and energy requirements, determines is achievable through application of measures, processes, methods, systems, or techniques.

Hydrogen Sulfide (H₂S) – A colorless inflammable gas having the characteristic odor of rotten eggs, and found in many mineral springs. It is produced by the reaction of acids on metallic sulfides, and is an important chemical reagent.

New Source Review (NSR) – A preconstruction review and permitting program applicable to new or modified major stationary sources of air pollutants regulated under the Clean Air Act (CAA). NSR is required by Parts C (“Prevention of Significant Deterioration of Air Quality”) and D (“Nonattainment New Source Review”).

Nitrogen Oxides (NO_x) – Compounds whose molecules consist of nitrogen and oxygen.

Organic Compound – Any compound of carbon and another element. Examples: Methane (CH₄), Ethane (C₂H₆), Carbon Disulfide (CS₂)

Part 70 Operating Permit – Also referred to as a Title V permit, required for major sources as defined in 40 CFR 70 and LAC 33:III.507. Major sources include, but are not limited to, sources which have the potential to emit: ≥ 10 tons per year of any toxic air pollutant; ≥ 25 tons of total toxic air pollutants; and ≥ 100 tons per year of regulated pollutants (unless regulated solely under 112(r) of the Clean Air Act) (25 tons per year for sources in non-attainment parishes).

PM₁₀ – Particulate matter with an aerodynamic diameter less than or equal to a nominal 10 micrometers as measured by the method in Title 40, Code of Federal Regulations, Part 50, Appendix J.

Potential to Emit (PTE) – The maximum capacity of a stationary source to emit any air pollutant under its physical and operational design.

Prevention of Significant Deterioration (PSD) – A New Source Review permitting program for major sources in geographic areas that meet the National Ambient Air Quality Standards (NAAQS) at 40 CFR Part 50. PSD requirements are designed to ensure that the air quality in attainment areas will not degrade.

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Sulfur Dioxide (SO₂) – An oxide of sulfur.

Sulfuric Acid (H₂SO₄) – A highly corrosive, dense oily liquid. It is a regulated toxic air pollutant under LAC 33:III.Chapter 51.

Title V Permit – See Part 70 Operating Permit.

Volatile Organic Compound (VOC) – Any organic compound, which participates in atmospheric photochemical reactions; that is, any organic compound other than those, which the administrator of the U.S. Environmental Protection Agency designates as having negligible photochemical reactivity.